24. (withdrawn) A method of generating a subscriber line constant DC current feed comprising the steps of:

(a) providing a switched-mode voltage-to- current trans-converter having a series output inductor coupled to the subscriber line;

(b) charging the inductor via a voltage source for a first time period in response to a dynamically time variable input signal; and

(c) discharging the inductor via the subscriber line for a second time period in response to the dynamically time variable input signal such that there is neither a net increase nor a net decrease of energy in the inductor, and further to generate a constant DC output current to the subscriber line such that the DC output current has a magnitude that remains constant with changing subscriber line impedance.

25. (cancelled)

REMARKS

Claims 1, 13 and 23 have been amended and claim 25 has been previously canceled. Claims 1 to 7, 13 to 16 and 23 remain active in this application, claims 8 to 12, 17 to 22 and 24 have been withdrawn and claim 25 has been canceled.

Claims 1 to 7 were rejected under 35 U.S.C. 112, first paragraph, as not complying with the written description requirement. Claim 1 has been amended to overcome this rejection.

With reference to this rejection, it is to be noted that the SLIC is normally used in the central office (CO) to drive subscriber lines over long distances (generally several miles). In the case of voice-enable cable modems (or voice over DSL), the SLIC is present within the modem. This enables the user to connect a normal telephone instrument to the cable modem's telephone port. The modems can run a VOIP (voice over internet protocol) application which will carry the voice call over the internet and could terminate in another similar voice-enabled modem or even terminate in a telephone connected to the traditional telephone network.

The SLIC interface between the modem and the telephone instrument is an analog interface similar to the interface between a CO and subscriber's home telephone. The difference between the two scenarios is:

(a) The modem is located within the same premises as the telephone and hence the length of the loop is short.

(b) The power to the SLIC is derived from the modem itself and hence it is of importance to save power.

Such a scenario (of voice-enabled modems) is shown in Fig. 1. Since both the modem (with an in-built SLIC) and the telephone instrument are both within the same

premises, the length of the 2-wire loop is short (as compared to a normal CO scenario). Hence, the SLICs within the modem are optimized to operate at short-loops and are often referred to as "Short-Loop SLICs".

The present invention addresses the low-power needs of such short-loop SLICs. The present invention provides a manner in which the short loop SLIC can pump an optimum amount of DC current to the telephone in a very power-efficient manner.

It is readily apparent that while the SLIC and modem can be separate from but in close proximity to the telephonic device with the SLIC generally being within the modem, the SLIC and modem can also be a part of the telephonic device itself and the claims herein are intended to cover both possibilities and, in any event, not be limited to one or the other of these possibilities.

Claims 13 to 16 and 23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Boudreaux, Jr.(U.S. 6,668,060) in view of Anderson et al. (U.S. 6,728,37)). The rejection is respectfully traversed. Claim 25 was also rejected, this rejection not being understood since claim 25 has been canceled.

An embodiment readable on these claims is founding Fig. 17, for example. The discussion of this figure as found on page 13, line 30ff.

Claim 13 requires, among other features, a switched-mode current boost converter configured to provide a constant DC current feed to a subscriber line. No such feature is found or suggested In either of the applied references.

Claim 13 also requires that the converter include at least one capacitor, at least one output series inductor, a first switch and a second switch. No such structure or the claimed combination is found in either of the applied references.

Claim 13 yet further requires that the first and second switches be responsive to the dynamically time varied input signal to switch alternately and in complementary fashion to implement a first state and a second state such that the at least one capacitor is charged by a current source while in the first state and discharging via the at least one output series inductor in the second state to generate the constant DC current feed. No such structure or the claimed combination is found in either of the applied references.

It is further noted that in Boudreaux, Jr. et al., the circuit controls the supply voltage of the SLIC in minimize the power that is dissipated in the SLIC. Although this improves upon the standard and traditions SLIC (with regard to power consumption), the drawback is that in such a circuit there is a fixed drop ("headroom" as mentioned in the patent). This causes some loss of efficiency. The present invention uses a new switch mode technique to do both of (a) behaving like a current source with high efficiency of typically 85% and (b) not disturbing the existing voice band impedance of the SLIC.

With reference to Anderson et al., this patent is for impedance matching which is a property in the voice band. This has nothing whatsoever to do with the subject invention which is primarily for pumping DC current in a highly efficient manner without disturbing the existing impedance.

Claims 14 to 17 and 23 were rejected for the same reason as in the prior Office action. However, in the prior Office action these claims were rejected for the same reasons as in the still prior Final Office action of 14 September 2005 and in that Office action claims 14 to16 were rejected for the same reasons as claim 5 to 7 and claim 23 was apparently rejected for the same reason as claim 5 of the prior Final Office action. However, none of these claims (5 to 7) are rejected on prior art in the present Office

action and the rejection of claims 1 to 7 on section 112, first paragraph, is obviated by the amendment herein.

Claims 14 to 17 depend from claim 13 and define patentably over the applied references for at least the reasons presented above with reference to claim 13.

In addition, claim 14 further limits claim 13 by requiring an AC current source configured to synthesize a subscriber line termination impedance and to implement subscriber line high fidelity speech transmit and receiving functions. No such combination is taught or suggested by Boudreaux, Jr., Anderson et al. or any proper combination of these references. Nowhere in the Office action is there any attempt to show where in the cited art the features of this claim or the combination with claim 13 are to be found.

Claim 15 further limits claim 13 by requiring that the first switch comprise a CMOS transistor in response to the dynamically time varied input signal to cause the switched-mode current boost converter to switch between its first and second states to maintain a constant DC output current. No such combination is taught or suggested by Boudreaux, Jr., Anderson et al. or any proper combination of these references. Nowhere in the Office action is there any attempt to show where in the cited art the features of this claim or the combination with claim 13 are to be found.

Claim 16 further limits claim 15 by requiring that the second switch comprise a fast response diode to switch alternately and in complimentary fashion with the CMOS transistor in response to the dynamically time varied input signal. No such combination is taught or suggested by Boudreaux, Jr., Anderson et al. or any proper combination of

these references. Nowhere in the Office action is there any attempt to show where in the cited art the features of this claim or the combination with claim 13 are to be found.

Claim 17 further limits claim 13 by requiring that the dynamically time varied input signal be generated via a pulse width modulated controller. No such combination is taught or suggested by Boudreaux, Jr., Anderson et al. or any proper combination of these references since there is no showing how the combination is to be found in the cited references.

Claim 23 is essentially tracks claim 13 except that it is in method format. Accordingly, the arguments presented above with reference to claim 13 apply to claim 23.

Claim 23 requires, among other features, a method of generating a subscriber line constant DC current feed. No such combination is taught or suggested by Boudreaux, Jr., Anderson et al. or any proper combination of these references

Claim 23 further requires, among other features, the steps of charging the capacitor via a current source for a first time period in response to a dynamically time variable input signal and discharging the capacitor via the series output inductor for a second time period in response to the dynamically time variable input signal such that there is substantially no change of energy in the inductor and the capacitor to generate a constant DC output current to the subscriber line, the DC output current having a magnitude greater than the source current operative to charge the capacitor. Nowhere in the Office action is there any attempt to show where in the cited art the features of this claim are to be found.

In view of the above remarks, favorable reconsideration and allowance are respectfully requested.

Respectfully submitted,

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